

Purchase Power Options

The 2020 IRP includes simulation of two Purchase Power Agreements (PPA) available to Santee Cooper as resource options to meet power supply needs during 2031 to 2040. One is a unit-continent tolling agreement based on the operating and cost parameters of an NGCC resource. The other available PPA is not tied to a particular resource, but instead reflects a tolling agreement backed by multiple resources and energy prices indexed to NG hub prices and a fixed heat rate. The PPA resources were assumed to be available any year during 2031 to 2040 in five megawatt increments up to the maximum available capacity. The PPA resources were modeled as options in CapEx in the same manner as generating resource options to allow the CapEx model to optimize resource plans that included small PPA increments each year or larger, more efficient NGCC resources, or both, depending on least-cost planning decisions. Table 6-11 provides the cost and operating parameters of both PPAs that were used for the 2020 IRP.

Table 6-11
PPA Cost Assumptions 2031-2040

	System Purchase	NGCC Purchase	Annual Escalation
Capacity (MW)	Up to 300 MW	Up to 200 MW	
PPA Price (2031 \$)			
Capacity Price (\$/kW-mo)	6.00	6.25	2.0%
NG FT Charge (\$/kW-mo)	1.33	2.48	0.0%
Variable O&M (\$/MWh)	3.34	3.75	2.0%
Start-up Cost (\$/start/MW)	0.00	21.50	2.0%
Heat Rate (Btu/kWh)	7,000	7,000	
Transmission Losses	2.2%	2.2%	

During the near-term period 2020 through 2030, the 2020 IRP assumes that any capacity needed to maintain the Santee Cooper planning reserve margin could be served through short-term annual capacity purchases. Pricing for these short-term purchases is based on market price information provided by TEA as depicted in Table 6-12.

Table 6-12
Short-term Capacity Purchase Price

Year	Capacity Price (\$/kW-mo)
2020	3.50
2021	4.25
2022	4.79
2023	4.88
2024	4.97
2025	5.00
2026	5.08
2027	5.16
2028	5.25
2029	5.34
2030	5.43

Transmission System Considerations

Import Limitations

Quantities of economy energy purchases that could be imported into the Santee Cooper system were limited to hourly maximum import and export limits based on typical market trading practices of Santee Cooper. Import limits are assumed to vary by season and across the Tier 1 and Tier 2 economy purchases. Additionally, transmission studies performed by Santee Cooper have indicated that import limits are likely to vary depending on where Santee Cooper decides to add new resources to the system following the retirement of Winyah Generating Station. If new generating resources are added at the Winyah site (essentially replacing the retired Winyah resources), then import limitations are unaffected. However, if new resources are built at alternative sites, further from the Santee Cooper load centers, import limits are likely to be reduced, thus limiting access to economy purchases. By modeling varying limits for transmission imports, potential resource plans evaluated for the 2020 IRP considered the tradeoff between varying costs of developing different sites against the value of access to economy power transactions. Import limits modeled for the IRP for both economy energy purchase tiers are depicted in Table 6-13.

Table 6-13
Estimated Import Limits Across Potential Major System Resource Builds

NGCC Development Site	Import Limits (MW)		
	Jan-Feb, Dec	May-Sep	Mar-Apr, Oct-Nov
Winyah Site			
Tier 1	650	650	650
Tier 2	150	550	350
Total	800	1,200	1,000
Near-Summer Site			
Tier 1	490	650	610
Tier 2	0	80	0
Total	490	730	610
Pee Dee Site			
Tier 1	650	650	650
Tier 2	0	320	160
Total	650	970	810

Transmission Upgrades

As previously mentioned, the 2020 IRP considered generating resource additions at multiple sites throughout the Santee Cooper system. Resource additions were considered at the existing Winyah Generating Station and Cross Generating Station sites (when portfolios considered the retirement of the Cross coal resources). Other sites evaluated include the Pee Dee site (land currently owned by Santee Cooper) and a new site near the V. C. Summer Generating Station. When considering development at the existing Winyah or Cross sites (following retirement of the existing generating resources at these sites), only limited transmission investment would be required to reconfigure

substation interconnections since the surrounding transmission grid is already developed to accommodate significant generating capacity at these sites. However, for the Pee Dee site and the site near V. C. Summer, transmission system upgrades would be required to allow development of these sites.

To estimate transmission system upgrade costs for each site, Santee Cooper performed transmission load flow studies to identify necessary system upgrades and prepared preliminary cost estimates. These estimates include costs to reconfigure the existing substations at Winyah and Cross Generating Stations and for new bulk transmission system facilities to accommodate new generating resources at the Pee Dee site and the site near V. C. Summer. These costs were added to other capital and operating costs when evaluating least-cost resource portfolios for the 2020 IRP. Table 6-14 summarizes the incremental transmission system upgrade costs modeled for the 2020 IRP for each evaluated site. See Appendix A for additional information on planned transmission system upgrades.

Table 6-14
Estimated Incremental Costs for Transmission System Upgrades

Generating Site	Cost of Upgrade (2020 \$Millions)
Winyah Generating Station	\$10
Cross Generating Station	\$10
New Pee Dee Site	\$84
New Site Near V. C. Summer	\$308

In addition to the transmission system upgrades described above, the transmission evaluations determined that additional quick-start generating capability would be needed near the Conway substation if new NGCC/NGCT resources are not installed at the Winyah Generating Station to replace the retiring coal units. Modeled quick-start generating resource additions included multiple RICE units totaling 20 megawatts, as discussed in more detail above, plus a new LM2500 generating unit, using assumptions summarized above, when new NGCC/NGCT resources were modeled to be developed at sites other than Winyah.⁸

⁸ As discussed in more detail in Section 8 of this report, Santee Cooper is continuing to investigate multiple options for new quick-start resources to address transmission system support requirements for the retirement of the Winyah Generating Station.

Section 7

IRP Results & Conclusions

Resource Portfolio Evaluation

Resource Expansion Analysis

Santee Cooper has prepared its 2020 IRP utilizing electric system simulations to identify potential resource expansion plans. These evaluations were performed utilizing the assumptions described previously in this IRP Report with respect to forecast system loads, fuel prices, natural gas transportation, economy energy purchases, existing generating resources and purchase power arrangements, options for future generating and purchase power resources, renewable and storage resources, demand-side resources, and transmission system impacts. Resource portfolios with varying assumptions for coal retirement were analyzed under the Base Case assumptions and under multiple sensitivity assumptions.

It should be noted that the resource plans represented in this 2020 IRP, including generating and purchase power resource options and development of potential generating resource sites, are intended to depict reasonable representations of future resource development that Santee Cooper could undertake in the future. However, other than the initiatives outlined herein with respect to the Santee Cooper Short-term Action Plan, Santee Cooper has not made any final decisions with respect to specific resources or development of specific generation sites.

Resource Expansion Analysis Process

As previously discussed, Santee Cooper utilized the CapEx software to estimate hourly resource dispatch of the Santee Cooper system and to evaluate future resource expansion plans. The CapEx model uses a mixed integer linear programming technique to identify least-cost portfolios of future resource additions derived from representative options under consideration by Santee Cooper (as described above). Additionally, Santee Cooper evaluated options to develop future resources at multiple sites throughout its electric system, including developing new generating facilities at the existing Winyah Generating Station (Winyah Site), developing a new generating station at the Pee Dee site currently owned by Santee Cooper (Pee Dee Site), developing a new generating station near or adjacent to the existing V. C. Summer generating station (Summer Site), and developing new generating facilities at the existing Cross Generating Station (Cross Site) when evaluating retirement of the existing Cross generating units. By evaluating options for multiple resource types and multiple resource development sites, Santee Cooper was able to evaluate numerous potential resource configurations, for which only the most cost-effective have been reported in this 2020 IRP.

Resource expansion plans were evaluated in CapEx over a twenty-one-year Planning Period, 2020 through 2040, over which decisions on resource additions were modeled to identify least-cost plans. Additionally, total costs were modeled through a forty-one-year Study Period, through 2060, which includes an additional twenty-years beyond the Planning Period to ensure that capital costs of major

resource additions and end effects of production operating costs are captured when considering the optimum least-cost plans. Over this additional twenty-year period of the Study Period, loads and resources were held constant but fuel prices, economy energy prices, and O&M costs continued to escalate.⁹ Potential resource plans were compared on a present value basis for costs projected over the Study Period using the Santee Cooper discount rate depicted previously in Table 6-2.

Costs modeled and reported in the 2020 IRP include the following.

- Fuel costs of existing and new resources
- Fixed and variable O&M costs of existing and new resources
- Demand and energy charges for purchase power resources
- Debt service on new resources
- Transmission upgrades (including capital and maintenance costs)
- Reduced capital additions related to the Cross Generating Station in portfolios that reflect retirement of Cross
- Decommissioning costs when retiring existing coal resources

Costs reported in the 2020 IRP do not include costs for existing debt service, operating costs for transmission and distributions systems, and customer service and administrative and general costs, nor do they reflect revenue for wholesale sales (which are consistent across all simulated cases). In this way, costs reported in the 2020 IRP that are used to compare and identify least-cost resource portfolios include all of the costs that are subject to change between potential portfolios, but do not reflect the full cost of Santee Cooper.

Retirement and Sensitivity Analyses

The 2020 IRP considered two alternative retirement portfolios for the Santee Cooper coal resources. Under each coal retirement portfolio, resource expansion optimization analyses were performed under the Base Case assumptions and under sensitivity case assumptions. The coal resource retirement scenarios include the following.

- **Retire Winyah Portfolios** – Winyah is modeled to be retired in phases, with two of the four generation units being idled by the winter of 2021/2022 and fully retiring all four generating units by 2027.
- **Retire All Coal Portfolios** – The Winyah Plant is retired as described above, and the Cross Plant is retired in phases beginning with Units 1 and 2 retired in 2030 and Units 3 and 4 retired in 2032.

As previously discussed, the 2020 IRP was prepared under a Base Case set of assumptions and under multiple sensitivity case assumptions for variations in pricing for fuel and economy energy markets, implementation of a CO₂ tax, high and low load levels, and variations in the amount of solar resources.

⁹ Additionally, an NGCT was allowed to be installed in 2041 if needed to replace long-term PPA purchases that were modeled for the 2031 through 2040 period.

As discussed in more detail in the prior Section 6 of the IRP Report, the evaluated sensitivity cases include the following.

- **Higher/Lower Load** – Higher and lower retail and wholesale loads by one standard deviation of expected load forecast error due to economic uncertainty
- **High Natural Gas and Economy Energy Prices** – 50 percent increase in natural gas prices and an associated increase in economy power prices for market purchases in all years
- **CO₂ Tax** – \$15 per ton price beginning in 2027, increasing annually by \$5 per ton until a cap of \$80 per ton is reached in 2040
- **Lower Level of Solar Resources** – Reduction in planned solar implementation by 500 megawatts

Table 7-1 summarizes the sensitivity cases modeled for the two retirement portfolios.

Table 7-1
Sensitivity Cases by Retirement Portfolio

Sensitivity Case	Retire Winyah	Retire All Coal
High Load Case	✓	—
Low Load Case	✓	✓
High NG Case	✓	✓
CO ₂ Tax Case	✓	✓
Lower Solar Case	✓	—

Other Considerations

Over the course of developing its 2020 IRP, Santee Cooper reviewed costs to secure natural gas service through multiple pipeline sources, including over the Dominion pipeline system and through new pipeline laterals tied to the Transco pipeline that could be built either by Transco/Williams, Santee Cooper, or others. Through these analyses, Santee Cooper has identified natural gas supply as a significant resource planning consideration that could affect its decision to develop one potential generation site over another. While the assumptions presented in the IRP Report reflect current reasonable assumptions for the cost of natural gas supply, Santee Cooper is still investigating fuel supply and other considerations that could ultimately affect resource and site selections.

Additionally, Santee Cooper performed analyses to screen and identify preferred generation development sites, including relative costs for transmission upgrades and costs for natural gas supply. Through these analyses, Santee Cooper identified three preferred sites for evaluation within the 2020 IRP—the Winyah Site, the Pee Dee Site, and the Summer Site (see additional site descriptions in the section Resource Expansion Analysis Process, above). Each of these sites were analyzed with unique

assumptions for the cost of transmission upgrades, economy energy import limits, and the cost of securing natural gas service. While Santee Cooper considers the modeling of these sites to be reasonable for use in the 2020 IRP, Santee Cooper has not made any final decisions with respect to the development of specific generation sites.

Results of the Resource Expansion Analysis

The following tables summarize results of the Base Case and sensitivity case analyses performed for the 2020 IRP. Table 7-2, below, provides results assuming retirement of the Winyah Generating Station. Table 7-3, below, provides results assuming retirement of all Santee Cooper coal resources (retirement of both Winyah and Cross Generating Stations). The tables depict the resources projected to be built under each retirement portfolio and each Base Case and sensitivity case and the projected present value costs for each case. As discussed above, present value costs depict certain power supply costs that can vary across different resource plans, but do not reflect certain Santee Cooper costs for existing debt and other operating and administrative and general costs that are the same across the resource plans.

By way of example, the results in Table 7-2 can be read as follows. The present value cost of the Base Case is projected to be \$24.1 billion over the 2020 to 2060 Study Period. As depicted in the right-most columns of the table, common resources assumed to be built and retired under the Base Case and all sensitivity cases include the idling and retirement of the Winyah coal resources and the installation of RICE, BESS, and DR resources over the Planning Period. Resources listed under the remaining columns for the Base Case and the sensitivity cases depict the resource additions identified through the resource optimization analyses performed for each case.

For each set of assumptions for coal resource retirements and the Base Case and sensitivity case assumptions, the resource expansion analysis performed in the CapEx model was allowed to optimize resource plans specific to the conditions associated with each case. Utilizing this approach, Santee Cooper was able to understand the variability of future power supply costs, recognize how resource expansion portfolios change for specific sensitivity assumptions, and examine whether specific resource expansion decisions were robust and would not change materially with changes in major assumptions. Results and conclusions presented herein were reviewed with Central during the development of the 2020 IRP.

Table 7-2
NPV Power Supply Costs and Resource Expansion Plan - Winyah Retired

	Base Case	Low Load	High Load	High NG Price	CO2 Tax	Lower Solar	Fixed Resource Retirements & Additions		Legend
NPV (2020\$)	\$24.1 B	\$21.9 B	\$29.2 B	\$25.9 B	\$31.9 B	\$24.4 B	Resources	Demand Response	
Resource Additions									
2020								DR 18MW	Retirements
2021							Winyah Coal (290MW)	DR 6MW	NGCC
2022	Solar 75MW	Solar 75MW	Solar 75MW	Solar 75MW	Solar 75MW	Solar 75MW	Winyah Coal (290MW)	DR 6MW	NGCT
			ST Purchase Annual 125MW				Diesel RICE 20MW		SPC LT PPA
2023	Solar 350MW	Solar 350MW	Solar 350MW	Solar 350MW	Solar 350MW	Solar 350MW		DR 8MW	ST Capacity Purchase
			ST Purchase Annual 170MW						Diesel RICE
2024			ST Purchase Annual 220MW					DR 11MW	LM2500
2025	Solar 245MW	Solar 245MW	Solar 245MW	Solar 245MW	Solar 245MW	Solar 245MW		DR 9MW	Solar
			ST Purchase Annual 315MW						BESS
2026	Solar 275MW	Solar 275MW	Solar 275MW	Solar 275MW	Solar 275MW	Solar 275MW	BESS 50MW	DR 12MW	Demand Response
	ST Purchase Annual 10MW		ST Purchase Annual 355MW	ST Purchase Annual 10MW	ST Purchase Annual 10MW	ST Purchase Annual 10MW			
2027	NGCC Summer 552MW	NGCC Summer 552MW	NGCC Summer 552MW	NGCC Summer 552MW	NGCC Summer 552MW	NGCC Summer 552MW	Winyah Coal (570MW)	DR 15MW	
			2xNGCT Summer 696MW						
	LM2500 32MW	LM2500 32MW	LM2500 32MW	LM2500 32MW	LM2500 32MW	LM2500 32MW			
2028	ST Purchase Annual 35MW			ST Purchase Annual 35MW	ST Purchase Annual 35MW	ST Purchase Annual 35MW		DR 7MW	
2029	Solar 305MW	Solar 305MW	Solar 305MW	Solar 305MW	Solar 305MW	Solar 55MW		DR 5MW	
2030	Solar 100MW	Solar 100MW	Solar 100MW	Solar 100MW	Solar 100MW			DR 4MW	
					2xNGCC Summer 1105MW				
2031	Solar 75MW	Solar 75MW	Solar 75MW	Solar 75MW	Solar 75MW			DR 1MW	
	PPA 5MW			PPA 5MW		PPA 5MW			
2032	Solar 75MW	Solar 75MW	Solar 75MW	Solar 75MW	Solar 75MW			DR 2MW	
	PPA 40MW			PPA 40MW		PPA 40MW			
2033			PPA 15MW				BESS 50MW	DR 1MW	
2034	PPA 35MW		Summer NGCT 348MW	PPA 25MW		PPA 25MW		DR 1MW	
2035							BESS 50MW		
2036							BESS 50MW		
2037	PPA 25MW			PPA 30MW		PPA 30MW			
2038	PPA 45MW		PPA 35MW	PPA 50MW		PPA 55MW			
2039	PPA 50MW		PPA 110MW	PPA 50MW		PPA 45MW			
2040	PPA 45MW		PPA 110MW	PPA 45MW		PPA 45MW			

Table 7-3
NPV Power Supply Costs and Resource Expansion Plan - All Coal Retired

	Base Case	Low Load	High NG Price	CO2 Tax	Fixed Resource Retirements & Additions		Legend
NPV (2020\$)	\$24.7 B	\$22.3 B	\$28.3 B	\$31.3 B	Resources	Demand Response	
Resource Additions							
2020						DR 18MW	Retirements
2021					Winyah Coal (290MW)	DR 6MW	NGCC
2022	Solar 75MW	Solar 75MW	Solar 75MW	Solar 75MW	Winyah Coal (290MW)	DR 6MW	NGCT
					Diesel RICE 20MW		SPC LT PPA
2023	Solar 350MW	Solar 350MW	Solar 350MW	Solar 350MW		DR 8MW	ST Capacity Purchase
2024						DR 11MW	Diesel RICE
2025	Solar 245MW	Solar 245MW	Solar 245MW	Solar 245MW		DR 9MW	LM2500
2026	Solar 275MW	Solar 275MW	Solar 275MW	Solar 275MW	BESS 50MW	DR 12MW	Solar
	ST Purchase Annual 10MW		ST Purchase Annual 10MW	ST Purchase Annual 10MW			BESS
2027	NGCC Summer 552MW	NGCC Summer 552MW	NGCC Summer 552MW	NGCC Summer 552MW	Winyah Coal (570MW)	DR 15MW	Demand Response
	LM2500 32MW	LM2500 32MW	LM2500 32MW	LM2500 32MW			
2028	ST Purchase Annual 35MW		ST Purchase Annual 35MW	ST Purchase Annual 35MW		DR 7MW	
2029	Solar 305MW	Solar 305MW	Solar 305MW	Solar 305MW		DR 5MW	
2030	Solar 100MW	Solar 100MW	Solar 100MW	Solar 100MW	Cross Coal (1155MW)	DR 4MW	
	2xNGCC Summer 1105MW	NGCC Summer 552MW	2xNGCC Summer 1105MW	2xNGCC Summer 1105MW			
		NGCT Summer 348MW					
2031	Solar 75MW	Solar 75MW	Solar 75MW	Solar 75MW		DR 1MW	
	PPA 55MW		PPA 55MW	PPA 55MW			
2032	Solar 75MW	Solar 75MW	Solar 75MW	Solar 75MW	Coal Cross (1225MW)	DR 2MW	
	NGCC Cross 552MW	NGCC Cross 552MW	NGCC Cross 552MW	NGCC Cross 552MW			
	2xNGCT Cross 696MW	NGCT Cross 348MW	2xNGCT Cross 696MW	2xNGCT Cross 696MW			
	PPA 15MW	PPA 145MW	PPA 15MW	PPA 15MW			
2033					BESS 50MW	DR 1MW	
2034	PPA 25MW		PPA 25MW	PPA 25MW		DR 1MW	
2035					BESS 50MW		
2036					BESS 50MW		
2037	PPA 35MW		PPA 35MW	PPA 35MW			
2038	PPA 45MW		PPA 50MW	PPA 45MW			
2039	PPA 55MW		PPA 55MW	PPA 55MW			
2040	PPA 50MW		PPA 50MW	PPA 50MW			

Conclusions

The following observations and conclusions were drawn from the 2020 IRP study results depicted in Table 7-2 and Table 7-3, above.

1. Across all sensitivity cases and under both of the coal retirement portfolios, the optimized resource portfolio includes an initial NGCC build at the Summer Site (which reflects an assumed joint build of a 2x1 NGCC). This result indicates that a decision to build an initial NGCC in 2027 reflects a robust resource planning decision.
2. Under the low load scenario, resource portfolios depicting a retirement of the Winyah Generating Station are lower cost than resource portfolios that include the retirement of both the Winyah and Cross Generating Stations.
3. Identified resource portfolios are sufficiently flexible to readily accommodate both high and low load scenarios by adapting future resource additions to meet changes in loads. Importantly, all the optimum resource portfolios identified for the high and low load scenarios include an initial NGCC build at the Summer Site in 2027.
4. Under the High NG Price scenario, a resource portfolio that includes the retirement of both the Winyah and Cross Generating Stations results in higher cost than the portfolio with Winyah retirement only, indicating that the Cross resources provide fuel diversity and a hedge against high natural gas prices.
5. Under the CO₂ Tax scenario, a resource portfolio that includes the retirement of both the Winyah and Cross Generating Stations is considerably lower in cost than a portfolio that includes only the retirement of the Winyah Generating Station. Santee Cooper will continue to investigate retiring the Cross Generating Station as an option to mitigate potential future carbon regulation.
6. Under all scenarios other than the CO₂ Tax scenario, resource portfolios depicting a retirement of the Winyah Generating Station are lower in cost than resource portfolios that include the retirement of both the Winyah and Cross Generating Stations.
7. Reducing solar implementation, as assumed in the Lower Solar implementation scenario, results in higher cost.
8. The Summer Site is the preferred site for generation development (under the natural gas transportation assumptions assumed for the 2020 IRP).

Preferred Resource Plan

Based on the results of its 2020 IRP analysis, Santee Cooper's Preferred Resource Plan includes the key elements listed below. The Preferred Resource Plan provides a power supply roadmap that provides reliable service to customers, is based on realistic resource assumptions, can adapt as future conditions change, is not dependent on a single set of assumptions for future conditions, provides more affordable and competitive service to customers relative to other alternatives studied, and improves environmental performance under a wide range of market conditions. This plan assumes retirement of the Winyah Generating Station by 2027 and includes expansion resources depicted above in Table 7-2 for the Base Case set of assumptions. However, other than the initiatives outlined

in Section 8, Short-Term Action Plan, Santee Cooper has not made any final decisions with respect to specific resources or development of specific generation sites.

- **Retire Coal Resources**
 - Idle Winyah Units 4 and 3 by the winter 2020/21 and 2021/22, respectively
 - Retire the Winyah Generating Station by 2027
 - Continue operating Cross coal units, but evaluate retirement in the event of additional carbon regulation
- **Increase Natural Gas Resources**
 - Add a new jointly-developed NGCC resource targeted for 2027 and sited near the V. C. Summer Generating Station¹⁰
 - Continue to engage in market energy purchases (when economic) to further diversify power supply
 - Investigate opportunities for long-term PPA purchases to provide flexibility to meet future load growth and resource need
- **Ensure System Reliability**
 - Add quick-start peaking generating resources near the Conway substation coincident with the retirement of the Winyah generating units (potentially adding 20 megawatts of diesel-fired RICE generating units by 2022, already owned by Santee Cooper, and one LM2500 or similar technology by 2027)
 - Upgrade transmission facilities as needed to support the retirement of the Winyah coal resources and the addition of new natural gas-fired generating resources
- **Increase Solar Resource Implementation**
 - Plan for phased implementation of solar, beginning with 500 megawatts by 2023 through the current solar RFP process
 - Continue phased implementation of solar up to 1000 megawatts by 2026 and 1,500 megawatts by 2032
- **Incorporate Advanced Technologies**
 - Add battery storage technologies in phases to take advantage of technological advancements and expected cost decline
 - Add 50 megawatts of battery storage by 2026, 100 megawatts by 2033, and 200 megawatts by 2036
- **Encourage DSM and DR**
 - Execute Santee Cooper and Central DSM/conservation plans and DR program implementations and consider additional opportunities

¹⁰ Santee Cooper intends to conduct future planning and engineering studies and negotiate supplier arrangements before finalizing any resources or sites to be developed.

Figure 7-1 and Table 7-4, below, depict the supply and demand balance for the Preferred Resource Plan. The Preferred Resource Plan provides for increased diversity of resource types and is designed to closely align future resource additions to future load requirements to minimize Santee Cooper's future capital investments and to provide flexibility in meeting future needs and market conditions.

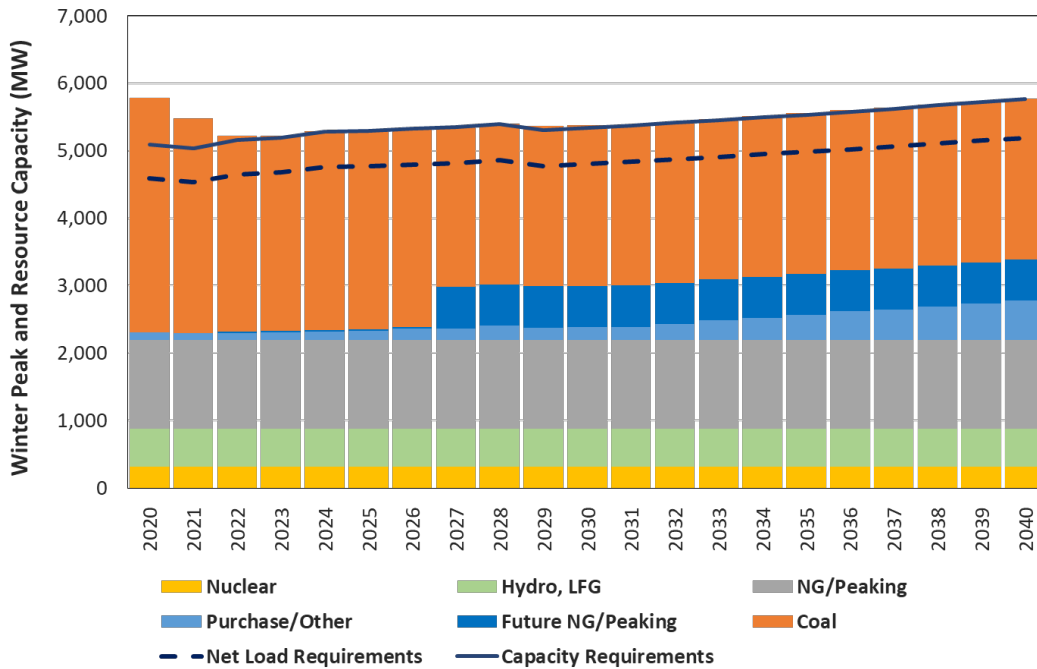


Figure 7-1: Supply and Demand Balance of Preferred Resource Plan

Table 7-4
Supply and Demand Balance - Preferred Resource Plan

Load & Resources	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040
<u>System Demand</u>																					
Winter Peak Demand	4,951	4,932	5,071	5,101	5,127	5,140	5,168	5,187	5,233	5,145	5,177	5,210	5,247	5,281	5,316	5,353	5,395	5,433	5,476	5,520	5,561
Less: Non-firm/Interruptible Loads	(308)	(339)	(370)	(370)	(370)	(370)	(370)	(370)	(370)	(370)	(370)	(370)	(370)	(370)	(370)	(370)	(370)	(370)	(370)	(370)	(370)
Less: Non-system Wholesale Sales	(52)	(52)	(52)	(52)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Less: Firm Hydro Resources	(389)	(389)	(389)	(389)	(389)	(389)	(389)	(389)	(389)	(389)	(389)	(389)	(389)	(389)	(389)	(389)	(389)	(389)	(389)	(389)	(389)
Net Peak Demand	4,202	4,152	4,260	4,290	4,368	4,381	4,409	4,428	4,474	4,386	4,418	4,451	4,488	4,522	4,557	4,594	4,636	4,674	4,717	4,761	4,802
<u>Resource Capacity</u>																					
Existing Resources																					
Coal Steam	3,530	3,240	2,950	2,950	2,950	2,950	2,950	2,380	2,380	2,380	2,380	2,380	2,380	2,380	2,380	2,380	2,380	2,380	2,380	2,380	2,380
Nuclear	322	322	322	322	322	322	322	322	322	322	322	322	322	322	322	322	322	322	322	322	322
NGCC/NGCT	1,150	1,150	1,150	1,150	1,150	1,150	1,150	1,150	1,150	1,150	1,150	1,150	1,150	1,150	1,150	1,150	1,150	1,150	1,150	1,150	1,150
Peaking	165	165	165	165	165	165	165	165	165	165	165	165	165	165	165	165	165	165	165	165	165
Landfill Gas	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29
Hydro	142	142	142	142	142	142	142	142	142	142	142	142	142	142	142	142	142	142	142	142	142
Purchases	89	74	74	74	74	74	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36
Total	5,427	5,122	4,832	4,832	4,832	4,832	4,794	4,224	4,224	4,224	4,224	4,224	4,224	4,224	4,224	4,224	4,224	4,224	4,224	4,224	4,224
Future Resources																					
NGCC	0	0	0	0	0	0	0	560	560	560	560	560	560	560	560	560	560	560	560	560	560
NGCT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Peaking	0	0	20	20	20	20	20	52	52	52	52	52	52	52	52	52	52	52	52	52	52
Demand Response	18	24	30	38	49	58	70	84	92	97	101	102	104	105	106	105	105	104	104	104	104
Energy Storage	0	0	0	0	0	0	50	50	50	50	50	50	50	100	100	150	200	200	200	200	200
Purchases	0	0	0	0	0	0	10	0	35	0	0	5	45	45	80	80	80	105	150	200	245
Total	18	24	50	58	69	78	150	746	789	759	763	769	811	862	898	947	997	1,021	1,066	1,116	1,161
Less: Unit-contingent Sales	(52)	(52)	(52)	(52)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Net Capacity	5,393	5,094	4,830	4,838	4,901	4,910	4,944	4,970	5,013	4,983	4,987	4,993	5,035	5,086	5,122	5,171	5,221	5,245	5,290	5,340	5,385
<u>Capacity Reserves</u>																					
Net Peak Demand	4,202	4,152	4,260	4,290	4,368	4,381	4,409	4,428	4,474	4,386	4,418	4,451	4,488	4,522	4,557	4,594	4,636	4,674	4,717	4,761	4,802
Planning Reserves (12%)	504	498	511	515	524	526	529	531	537	526	530	534	539	543	547	551	556	561	566	571	576
Total Capacity Requirements	4,707	4,650	4,771	4,805	4,892	4,907	4,938	4,959	5,011	4,912	4,948	4,985	5,026	5,065	5,104	5,145	5,192	5,235	5,283	5,332	5,378
Total Net Capacity	5,393	5,094	4,830	4,838	4,901	4,910	4,944	4,970	5,013	4,983	4,987	4,993	5,035	5,086	5,122	5,171	5,221	5,245	5,290	5,340	5,385
Capacity Surplus/(Deficiency)	686	443	59	33	9	3	5	10	2	71	38	8	8	21	17	25	28	9	7	8	7
Reserve Margin	28%	23%	13%	13%	12%	12%	12%	12%	12%	14%	13%	12%	12%	12%	12%	13%	13%	12%	12%	12%	12%

This Preferred Resource Plan builds on the beneficial changes to Santee Cooper's projected resource mix established for its Reform Plan completed in 2019. Figure 7-2 illustrates the changes in Santee Cooper's projected energy generation mix for the year 2033 resulting from its Reform Plan and currently projected under the 2020 IRP. The projected change in the generation mix for the Preferred Resource Plan also takes into consideration reductions in the projected cost of coal and natural gas, as well as economy energy available from surrounding utilities.

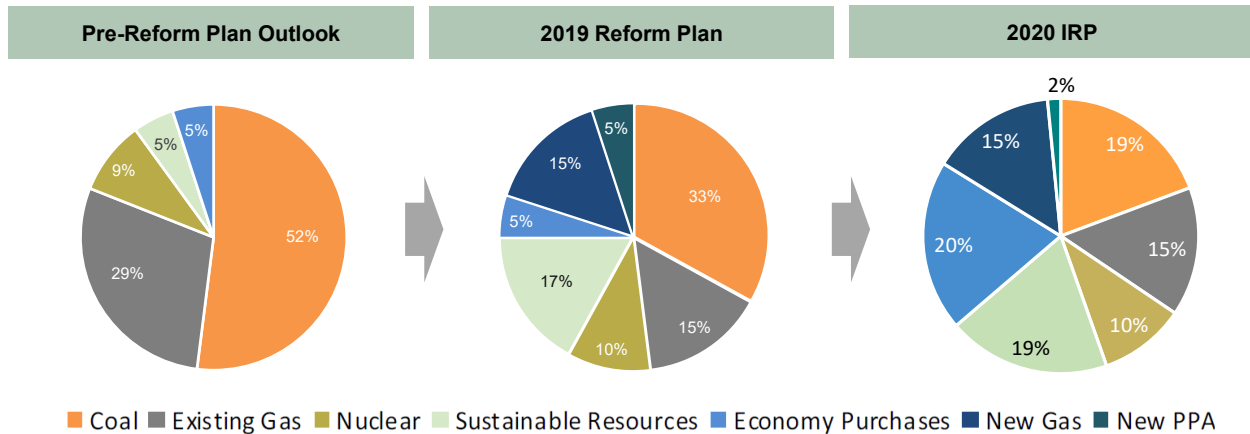


Figure 7-2: Evolution of Projected Santee Cooper Generation Mix for 2033

This evolution in projected generation mix is also accompanied by a considerable improvement in Santee Cooper's CO₂ emissions profile. Figure 7-3 illustrates that improvement by comparing average emissions over 2030-2039 to actual emissions in 2005 and 2015, all as a percentage of the 2005 emissions, which is a common comparative year in the industry for this purpose. The figure reflects a 43 percent reduction in projected emissions relative to 2005 levels for the 2019 Reform Plan and a further 12 percent reduction relative to 2005 for the 2020 IRP, which represents a 20 percent reduction versus the 2019 Reform Plan.

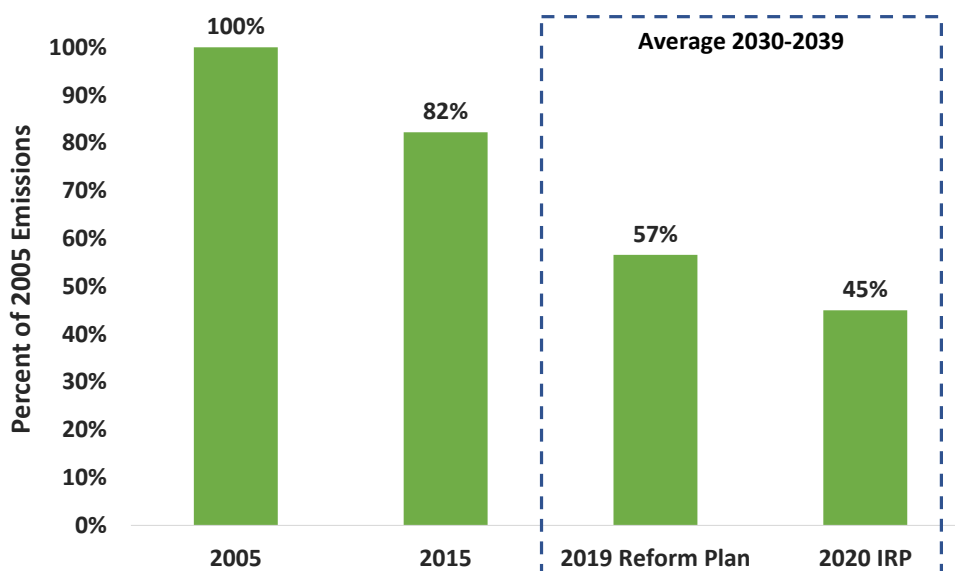


Figure 7-3: Projected CO₂ Emissions of the Santee Cooper System

Section 8

Short-Term Action Plan

The following Short-term Action Plan identifies the activities to be undertaken by Santee Cooper over the next five years to begin implementation of the Preferred Resource Plan documented in Section 7 of this IRP Report, IRP Results & Conclusions.

Current Activities

The following summarizes activities in which Santee Cooper is currently engaged to develop its future resource plans. As previously discussed in Section 3, Santee Cooper IRP Process, Santee Cooper interprets Act 135 to permit the following activities.

- On June 5, 2020, in coordination with Central, Santee Cooper issued a Request for Proposals for Solar Power to secure up to 500 megawatts of utility-scale, low-cost, low environmental impact power through long-term PPA arrangements with solar developers. Evaluation of submitted proposals, initial award, and negotiations are on-going. Santee Cooper intends to secure up to 500 megawatts of solar power through PPAs for installation by 2023.
- Santee Cooper is engaged in activities necessary for the closing and decommissioning of the Winyah Generating Station. Santee Cooper plans to idle Winyah Unit 4 by the winter of 2020/2021 and Unit 3 by the winter of 2021/2022. Santee Cooper continues to evaluate the appropriate timing for the idling of Winyah Units 3 and 4 with consideration of uncertain territorial loads, economies of operation and idling, and technical requirements to idle the generating facilities. Santee Cooper is planning for the retirement of the entire Winyah Generating Station by 2027. To advance these plans, Santee Cooper has developed a staffing plan for the Winyah Generating Station and has begun staff reassignment and reduction efforts. Additionally, future maintenance outage plans and schedules are being modified to accommodate the planned retirement of the station by 2027.
- Santee Cooper is investigating the installation of approximately 20 megawatts of diesel-fired RICE generating resources at a site near the Conway substation by 2022. Current plans call for relocating four RICE units from the V. C. Summer Generating Station to the site near the Conway substation to help support transmission system reliability upon the idling of Winyah Units 3 and 4. The RICE units at the V. C. Summer Generating Station are owned by Santee Cooper but are not currently in service. Santee Cooper is actively performing engineering studies regarding cost, feasibility, and permitting that may be required to relocate the RICE generating units.
- Santee Cooper has begun planning for a demand response program involving the control of residential and commercial retail customers' heat pumps and electric water heaters. Toward that end, Santee Cooper is conducting a procurement process to engage an experienced utility demand response program developer to work with Santee Cooper during initial

planning efforts. The demand response program is anticipated to work in tandem with Santee Cooper's existing conservation voltage reduction system and with similar programs administered by Central.

- Santee Cooper has begun preliminary studies of transmission system upgrades that would be required to support the Preferred Resource Plan documented in Section 7. These analyses have included transmission load flow studies to identify system upgrades required for the development of a new NGCC generating site, potentially near the existing V. C. Summer Generating Station, and preparation of preliminary cost estimates.
- Santee Cooper has begun preliminary discussions with potential teaming partners for the joint development of new generating facilities and fuel supply.

Future Activities and Studies

The following reflect future activities in which Santee Cooper intends to engage to further the development of the Preferred Resource Plan documented in Section 7, IRP Results & Conclusions. Depending on the results of these studies, Santee Cooper may modify its Preferred Resource Plan as part of future IRP filings if more cost-effective resource alternatives and plans are identified. Additionally, Santee Cooper recognizes that certain future activities may be limited by Act 135; Santee Cooper will comply with its obligations established by Act 135 prior to initiating activities that may be impacted by Act 135.

- Prepare engineering studies for the retirement of the coal units at the Winyah Generating Station, including detailed plans and studies for decommissioning, engineering, and permitting.
- Conduct additional studies regarding the integration of solar, up to 1,500 megawatts, and battery storage resources within the Santee Cooper system to better quantify the costs and benefits of operating these resources.
- Continue discussions with potential partners for the joint development of new generating facilities and fuel supply.
- Prepare feasibility studies and evaluations of potential generating sites, including studies of generating resource development and costs, natural gas fuel supply development and arrangements, and electric transmission system upgrade requirements.
- Investigate the feasibility of installing quick-start peaking generating resources at a site near the Conway substation to help support transmission system reliability upon the full retirement of the Winyah Generating Station. An LM2500 aeroderivative combustion turbine was assumed for purposes of the 2020 IRP; however, Santee Cooper has not made any final decisions with respect to specific resources that may be developed for this purpose.

Short-Term Action Plan

- Investigate the conversion of the existing electric generators at the Winyah Generating Station to operate as synchronous condensers to aid with addressing system reliability upon the full retirement of the Winyah Generating Station.
- Begin discussion with potential natural gas fuel suppliers to identify pipeline facilities and associated costs and charges to supply natural gas to a new generating site and, as warranted, conduct planning, feasibility, engineering, and permitting studies to develop natural gas pipeline facilities.
- Expand analysis of required transmission system upgrades, including submission of transmission service requests and preparation of joint planning studies that may be required prior to the development of a new generating site and, as warranted, conduct planning, feasibility, engineering, and permitting studies for new transmission facilities.
- Continue evaluations of potential DSM and DR programs, including leveraging the 2019 DSM Market Potential Study and conducting additional studies, when needed, and identify implementation scenarios for use in future Santee Cooper IRPs.
- Santee Cooper is investigating the development of a demand response program. Plans are anticipated to identify technologies to be deployed at customers' premises, identify a potential distributed energy resource management system (DERMS), define program incentive levels, develop an effective communication and marketing campaign, and develop a customer implementation and management processes. Santee Cooper intends to operate a demand response program in coordination with its existing conservation voltage reduction system and with similar programs administered by Central. Santee Cooper anticipates implementing a total of 61 megawatts of demand response capability by 2027.
- Develop a stakeholder engagement process in compliance with Act 62 and with consideration of Public Participation guidelines outlined in the consensus IRP Best Practices Guidelines produced by the State Energy Plan IRP Study Committee, as appropriate. Santee Cooper plans to begin development of a stakeholder engagement process in early 2021.¹¹

¹¹ With the compressed schedule since the enactment of Act 135 and onset of COVID-19, Santee Cooper was limited in its ability to engage in a robust stakeholder process for the 2020 IRP. While Santee Cooper engaged with Central in the development of the 2020 IRP, time did not permit engagement of other Santee Cooper customers or community stakeholders. Santee Cooper intends to develop and execute a stakeholder engagement process as part of its next IRP filing.

Appendices

Appendix A

Transmission System Planning

Transmission Planning Assessments

Santee Cooper performs various transmission system assessments annually in order to determine whether current transmission plans are valid and to provide possible solutions to identified areas of concern on the transmission system. These assessments are conducted by performing a thorough analysis of steady state power flows, facility interrupting capabilities, and total system dynamic performance on the Santee Cooper transmission system. Study efforts test the operation of existing facilities, re-evaluate the current completion dates of existing capital construction projects, and identify additional facilities needed to maintain adequate electric service throughout the system. By annually evaluating future system operation using up-to-date load projections and resource planning assumptions, the installation of new facilities may be effectively scheduled and their need verified in order to make efficient use of Santee Cooper resources in a continuing effort to provide safe, reliable, and economical electrical energy to both wholesale and retail customers.

As outlined in the Power System Coordination and Integration Agreement between Santee Cooper and Central, the transmission assessments performed by Santee Cooper outline transmission expansion and improvement plans for the combined Santee Cooper-Central transmission system, which includes Central-owned facilities within the Santee Cooper Planning Coordinator area, for a forward-looking 10-year planning horizon. The final plan is the result of studies evaluating requirements of the combined Santee Cooper-Central system for adequately supplying the total present and anticipated future transmission system requirements of both parties and for maintaining the integrity of the combined transmission system.

Santee Cooper endeavors to maintain a degree of reliability in electric service that will satisfy customer requirements at a reasonable cost. As a member of SERC, Santee Cooper adheres to regional reliability standards and to the Reliability Standards developed by the North American Electric Reliability Corporation. In order to meet these objectives, Transmission Reliability Criteria have been developed for the Santee Cooper System that are based on North American Electric Reliability Corporation Reliability Standard TPL-001. The primary concerns on the transmission system are that (i) all facilities remain within their continuous ratings, as outlined in Santee Cooper's Transmission Facility Ratings Methodology Document during normal operating conditions, (ii) all facilities remain within their emergency ratings during selected contingency conditions, (iii) the voltage on the transmission system remains within the ratings of the facilities on the system, and (iv) the voltage at the delivery point connection to each customer is within the operating range of standard equipment for the voltage class of the delivery point connection.

The planned retirement of Winyah is expected to require significant investment in the Santee Cooper transmission system. Upgrades to existing facilities and new facility construction are planned to facilitate the retirement of these resources. In addition, network upgrades will be required to provide

further transmission system support depending on the type and location of replacement generation being added to the Santee Cooper and adjacent systems.

Santee Cooper has established numerous interconnections with neighboring utilities to enhance reliability and permit economic power transactions. Interconnections are maintained with Duke Energy Progress, Duke Energy Carolinas, Dominion Energy South Carolina, Southern Company, and the Southeastern Power Administration. The interconnected nature of the transmission system also leads to situations where conditions on neighboring systems can impact the reliability of the Santee Cooper transmission system, as well as situations where conditions on the Santee Cooper transmission system can impact the reliability of neighboring systems. Santee Cooper actively coordinates with other utilities in the region to share modeling information to assure that coordinated models reflect expected conditions as accurately as possible to facilitate the most robust assessments possible. Study results are shared between utilities where potential issues are identified and corrective actions coordinated to mitigate the concern where necessary.

Table A-1 provides a list of projects associated with Santee Cooper's current transmission plan. The recommended completion dates reported for each project are based on information available as of the date of this report. Changes in anticipated transmission system operating conditions may result in modifications to these recommendations or to the scope of work outlined for each project.

Table A-1
Current Schedule of Transmission Capital Projects

Project Title	Recommended Completion Date
Bluffton 230-115 kV Substation: Add 115 kV Interconnection Metering Point	5/1/2021
Carnes Crossroads-Harleys Bridge 115 kV Line via McQueen Phase 2	6/1/2021
Carnes Crossroads 230-115 kV Transformer #3	6/1/2021
Series Bus Tie Breakers Hemingway 230 kV	11/1/2021
Purrysburg 230 kV Add Redundant Bus Differential Relays and Series Bus Tie Breakers	12/1/2021
115 kV Quickstart Generator Interconnections	12/1/2021
Rebuild Chiquola Spinners 115 kV Tap Line	12/1/2021
SCE&G-SCPSA Johns Island - Queensboro 115 kV Interconnection	12/31/2021
Replace Capacitor Bank ACI at Carnes Crossroads 230-115 kV Substation	12/31/2021
Charity - Industrial Customer 230 kV #2 Line	12/31/2021
Aiken 230 kV Tie Line with Dominion	12/31/2021
Reconductor North Charleston-Goose Creek 115 kV Line Section	3/31/2022
Aiken 230-115 kV Transformer #2	11/1/2022
Replace Switches at Yemassee 230 kV Switching Station	12/1/2022
Conway 230 kV Switching Station	9/1/2024
Marion-Conway 230 kV Line	9/1/2024
Chime Bell 115 kV Switching Station	12/1/2024
Replace Limiting Elements on Perry Rd - Carolina Forest 115 kV Line	12/1/2024
Kingstree 230 kV Series Bus Tie Breaker	12/1/2024

Project Title	Recommended Completion Date
Conway - Perry Road 230 kV Line	12/1/2025
Carolina Forest 230-115 kV Transformer #2	12/1/2026
Cross - Kingstree #1 and #2 230 kV Breaker and Switch Replacements	12/1/2026
Marion 230 kV Series Bus Tie Breaker	12/1/2026
Replace Limiting Elements on Jefferies-Georgetown #2 115 kV line	12/1/2026
Kingstree - Hemingway 230 kV #2 Line	12/1/2026
Dalzell - Lake City 230 kV Line	12/1/2026
Charity 115 kV Capacitor Banks	12/1/2026
Replace limiting elements on St. George-Orangeburg #1 115 kV line	12/1/2026
Replace limiting elements on Columbia-Lyles 115 kV line section	12/1/2026
Lugoff 230-69 kV Transformer #2	12/1/2027
Rebuild Blythewood-Lugoff 69 kV #1 Line	12/1/2027
Replace relaying on Lugoff - Blythewood #1 69 kV Line	12/1/2027
Bucksville - Conway 230 kV Line	12/1/2028
Varnville to Robertville 69 kV Rebuild to 115 kV	12/1/2028
Wassamassaw 230-115 kV Substation	12/1/2028
Wassamassaw-Pringletown #1 115 kV Line	12/1/2028
Rebuild Perry Road - Myrtle Beach #2 115 kV Line	6/1/2029
Nixons Crossroads - Red Bluff #1 115 kV Line	6/1/2030

Joint Planning Activities

Santee Cooper also participates in joint planning activities with other utilities in the region and the broader Eastern Interconnection to assure reliable operation of the wide-area bulk transmission system. The following is a list of joint study activities Santee Cooper has participated in recently:

- SERC Near-Term Working Group Summer and Winter Reliability Studies
- SERC Near-Term Working Group OASIS Studies
- SERC Long-Term Working Group Reliability Study
- Carolina Transmission Collaboration Agreement Reliability Studies
- South Carolina Regional Transmission Planning Transfer Studies
- Eastern Interconnection Planning Collaborative Low Inertia Model Development

Appendix B

Environmental Compliance Planning

Both the Environmental Protection Agency (EPA) and the Department of Health and Environmental Control (DHEC) have imposed various environmental regulations and permitting requirements affecting Santee Cooper's facilities. These regulations and requirements relate primarily to airborne pollution, the discharge of pollutants into waters, and the disposal of solid and hazardous wastes. Santee Cooper endeavors to ensure its facilities comply with applicable environmental regulations and standards. Federal and state standards and procedures that govern control of the environment and systems operations can change. These changes may arise from legislation, regulatory action, and judicial interpretations regarding the standards, procedures, and requirements for compliance and issuance of permits. Therefore, there is no assurance that units in operation, under construction, or contemplated will remain subject to the regulations that are currently in effect. Furthermore, changes in environmental laws and standards may result in increased capital and operating costs.

Air Quality

General Regulatory Requirements

Santee Cooper is subject to a number of federal and state laws and regulations addressing air quality. The Clean Air Act (CAA) regulates certain air pollutants, including particulate matter, ozone, sulfur dioxide (SO₂) and nitrogen oxides (NO_x), at Santee Cooper's fossil fuel generating facilities. Mercury is also regulated through the Mercury and Air Toxics Standard (MATS). Emissions of SO₂ and NO_x are also managed in accordance with the Acid Rain program and the Cross State Air Pollution Rule (CSAPR) through emissions allowance inventories and trading. Santee Cooper is in compliance with these regulatory requirements.

Evolving Regulatory Requirements

Greenhouse Gases

The Clean Power Plan, which established state limits on greenhouse gas emissions, was repealed in 2017. To replace it, the EPA issued the Affordable Clean Energy (ACE) Rule, in June 2019, establishing heat rate improvement (HRI) measures as the best system of emissions reduction (BSER) for CO₂ emissions from existing coal-fired generating units. ACE requires that states establish unit-specific "standards of performance" that reflect the emission limitations achievable through application of the BSER technologies as part of a State plan and requires State plans to be submitted within three years of the date of the final rule. EPA will then have one year to approve a State plan once submitted.

Santee Cooper is currently providing information to the DHEC as it develops unit-specific standards for the State plan. Santee Cooper has already adopted most of the proposed HRI measures at the Cross and Winyah Generating Stations and does not anticipate any significant investment or expenditures to comply with the State plan.

Santee Cooper continues to monitor possible regulatory developments with respect to greenhouse gases.

Water Quality

General Regulatory Requirements

Santee Cooper is subject to a number of federal and state laws and regulations which address water quality. The Clean Water Act (CWA) prohibits the discharge of pollutants, including heat, from point sources into waters of the United States, except as authorized in the National Pollutant Discharge Elimination System (NPDES) permit program. The DHEC has been delegated NPDES permitting authority by the EPA and administers the program for the State. Industrial wastewater discharges from all stations and the regional water plants are governed by NPDES permits. The DHEC also has permitting authority for stormwater discharges and Santee Cooper manages stormwater pursuant to the DHEC issued Industrial General Permits and Construction General Permits.

Evolving Regulatory Requirements

316(b) Fish Protection Regulations

Section 316(b) of the CWA, which became effective on October 15, 2014, requires that NPDES permits for facilities with cooling water intake structures ensure that the structures reflect the Best Technology Available (BTA) to minimize adverse environmental impacts from impingement and entrainment of fish and egg larvae. No significant impacts are expected at the existing Santee Cooper coal and natural gas fired generating stations; therefore, this regulation does not impact the 2020 IRP.

Effluent Limitation Guidelines

An NPDES Steam Electric Effluent Limitation Guidelines (ELG) rule was finalized late in 2020, after numerous revisions and postponements from the original rule issued in 2015. The rule requires stricter performance standards on discharges from coal-fired generating stations, requiring upgrades and installation of additional wastewater treatment systems. The new rule contained a subcategory for facilities facing retirement prior to year-end 2028. Santee Cooper is evaluating this retirement exemption for Winyah, and current financial forecasts assume that the exemption will be taken at Winyah, while the complete suite of flue gas desulfurization (FGD) wastewater treatment equipment will be installed at Cross.

PFAS

While not currently regulated, Santee Cooper is closely following potential regulation of Per- and Polyfluoroalkyl substances (PFAS), which are being extensively studied because of their widespread use and the potential for adverse health outcomes in humans. PFAS are typically found in consumer products such as cookware, cleaning products, and water-repellent fabrics, but can also be found in industrial products such as fire-fighting foams and in the Teflon film that coats many solar panels.

PFAS can contaminate drinking water, ground water and soil. Santee Cooper is assessing its existing facilities to determine if any PFAS exist.

Solid and Hazardous Waste and Hazardous Substances

General Regulatory Requirements

Santee Cooper is subject to federal and state laws and regulations, which address solid, universal, and hazardous wastes and substances. The Resource Conservation and Recovery Act (RCRA), under Subtitle C, is the overarching regulation providing the framework for proper management of hazardous waste, while others include the Clean Water Act (CWA), which imposes penalties for spills of oil or federally-listed hazardous substances into water and for failure to report such spills; the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), which provides for the reporting requirements to cover the release of hazardous substances into the environment and imposes liability upon generators of hazardous substances; and the Superfund Amendments and Reauthorization Act (SARA), which requires compliance with programs for emergency planning and public information. Santee Cooper has comprehensive programs, policies and procedures for on-going compliance in response to these regulations.

Evolving Regulatory Requirements

Coal Combustion Residuals Rule

Santee Cooper generates coal combustion residuals (CCR), including fly ash, bottom ash, scrubber sludge, and gypsum, when coal is combusted to produce electricity. CCR are regulated as a RCRA Subtitle D, nonhazardous waste. The federal CCR Rule establishes compliance standards, such as specific location standards, which has triggered closure of the Santee Cooper surface impoundments that are regulated by the CCR Rule. Santee Cooper has ash and gypsum slurry ponds at the Winyah, Cross, and Jefferies Generating Stations, all of which are regulated by the DHEC and which are closed or undergoing closure. A portion of these ponds are also subject to the CCR Rule, as noted above. Santee Cooper complies with the requirements of the CCR Rule, even as the CCR Rule continues to evolve as new regulations are promulgated.

CCR that can be beneficially reused are considered Coal Combustion Products (CCP), and include fly ash, bottom ash, and FGD products such as gypsum. In order to minimize the CCR that are landfilled, Santee Cooper has entered into contracts for the beneficial use of CCP and continually looks for new markets for excess quantities. As noted previously, Santee Cooper provides gypsum to American Gypsum for their wallboard production requirements. Gypsum and ponded gypsum that do not meet wallboard quality standards are provided to cement companies and the agriculture industry. Additionally, dry fly ash from the operating units and ash reclaimed from the Santee Cooper ash ponds are provided to the cement industry and bottom ash is provided to concrete block manufacturers.

At Cross and Winyah Generating Stations, dry CCR that cannot be beneficially used are disposed of in on-site industrial Class 3 solid waste landfills. These landfills are permitted by the DHEC to receive

Environmental Compliance Planning

the Santee Cooper CCR waste from any of Santee Cooper coal-fired generating units and CCR ponds. As noted above, these landfills are also federally regulated under the CCR Rule. Additional landfill cells for the Cross and Winyah Class 3 landfills are already fully permitted and will be constructed as the existing cells are filled and closed in order to provide ongoing landfill capacity.